

## Stem cells and healthy aging.

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### Public Summary:

This review focuses on the changes that occur in stems during the aging process. The overall focus is both on how mutations in the DNA of stem cells can alter the function and allow for subsets of stem cells to become the most dominant population in the tissue. The authors also review the literature on how stem cells in different tissues respond to their local and systemic environments in a way that alters their behavior and can actually also permit the growth of certain subsets of stem cells over other subsets. Together, these different influences can profoundly influence the heterogeneity of stem cells in our different tissues as we age, and this can significantly alter how effective those stem cells are in contributing to tissue homeostasis or repair.

### Scientific Abstract:

Research into stem cells and aging aims to understand how stem cells maintain tissue health, what mechanisms ultimately lead to decline in stem cell function with age, and how the regenerative capacity of somatic stem cells can be enhanced to promote healthy aging. Here, we explore the effects of aging on stem cells in different tissues. Recent research has focused on the ways that genetic mutations, epigenetic changes, and the extrinsic environmental milieu influence stem cell functionality over time. We describe each of these three factors, the ways in which they interact, and how these interactions decrease stem cell health over time. We are optimistic that a better understanding of these changes will uncover potential strategies to enhance stem cell function and increase tissue resiliency into old age.

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